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Abstract: In his Authentic Happiness Theory, Seligman describes three orientations that lead to happiness: The life of pleasure, the life of engagement, and the life of meaning (in Authentic happiness, Free Press, New York, 2002). The Orientations to Happiness Questionnaire (OTH; Peterson et al. in J Happiness Stud 6:25–41, 2005) has been developed as a subjective measure for these three orientations. In 2011, Seligman revised his theory and added two new components; i.e., positive relationships and accomplishment. These five are the basic tenets of his well-being theory. The present set of studies describes the construction and initial validation of two short scales for the subjective assessment of the endorsement of positive relationships and accomplishment. Their relation with the OTH-scales is also tested. Study 1 describes the scale construction and provides evidence for the factorial, convergent and divergent validity in three samples (n = 233, n = 336, and n = 125). Study 2 showed that the new scales have high test–retest reliabilities over a period of 1, 3, and 6 months (r = .68–.78), respectively. Study 3 examines the malleability of positive relationships and accomplishment in an intervention study that shows that the scores of both new scales increase in the intervention condition. Overall, the three studies show that the new scales have satisfactory psychometric properties—also when used together with the OTH-scales—and possible applications are discussed.

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The Subjective Assessment of Accomplishment and Positive Relationships: Initial Validation and Correlative and Experimental Evidence for Their Association with Well-Being

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Abstract

In his *Authentic Happiness Theory*, Seligman (2002) describes three orientations that lead to happiness: The life of pleasure, the life of engagement, and the life of meaning. The *Orientations to Happiness Questionnaire* (OTH; Peterson, Park, & Seligman, 2005) has been developed as a subjective measure for these three orientations. In 2011, Seligman revised his theory and added two new components; i.e., positive relationships and accomplishment. These five are the basic tenets of his well-being theory. The present set of studies describes the construction and initial validation of two short scales for the subjective assessment of the endorsement of positive relationships and accomplishment. Their relation with the OTH-scales is also tested. Study 1 describes the scale construction and provides evidence for the factorial, convergent and divergent validity in three samples (n = 233, n = 336, and n = 125). Study 2 showed that the new scales have high test-retest reliabilities over a period of 1, 3, and 6 months (r = .68 – .78), respectively. Study 3 examines the malleability of positive relationships and accomplishment in an intervention study that shows that the scores of both new scales increase in the intervention condition. Overall, the three studies show that the new scales have satisfactory psychometric properties – also when used together with the OTH-scales – and possible applications are discussed.

Keywords: accomplishment, authentic happiness theory, orientations to happiness, PERMA, positive psychology, positive relationships, test development, well-being theory.

Introduction

Positive Psychology is the scientific study of what makes life worth living (Seligman & Csikszentmihalyi, 2000). One of its goals is identifying actions or ways of life that lead to well-being. There are numerous approaches on how a "good life" can be achieved (e.g., Keyes, Shmotkin, & Ryff, 2002; Ryan & Deci, 2001). In 2002, Martin Seligman proposed in his *Authentic Happiness Theory* three different ways of life that should contribute to happiness: A hedonic orientation based on the pursuit of positive emotions (*life of pleasure*), a eudemonic orientation based on the pursuit of meaning (*life of meaning*), and an orientation that focuses on the pursuit of engagement (*life of engagement*) that is characterized by the search for flow experiences. Seligman argues that these three orientations can be pursued simultaneously and are, therefore, not mutually exclusive.

Peterson, Park, and Seligman (2005) developed the *Orientations to Happiness* (OTH) questionnaire for the assessment of the endorsement of these orientations. Peterson et al. (2005) reported positive relations between the endorsement of pleasure, engagement, and meaning, without them being neither exclusive nor redundant. Additionally, Peterson and colleagues found that the endorsement of each of these orientations is positively related to satisfaction with life. Numerous studies have replicated the relations between these orientations and different indicators of subjective well-being, also across different countries (e.g., Buschor, Proyer, & Ruch, 2013; Chan, 2009; Chen, Tsai, & Chen, 2010; Peterson, Ruch, Beermann, Park, & Seligman, 2007; Proyer, Ruch, & Buschor, 2013; Ruch, Harzer, Proyer, Park, & Peterson, 2010; Vella-Brodrick, Park, & Peterson, 2009).

In 2011, Seligman proposed a revision of his Authentic Happiness Theory. He argues that well-being (or *flourishing*) should be assessed as a multidimensional

construct and not as a unidimensional one, as in the assessment of life satisfaction or happiness. Based upon theoretical reasoning, he was interested in expanding the theory to cover well-being more broadly. Therefore, Seligman defined criteria that an element of well-being should meet: It should contribute to well-being, should be pursued for its own sake (not for the pursuit of another element), and the definition and measurement should be independent of the other elements (Seligman, 2011). Following these criteria, he suggested the inclusion of two further elements as an extension of the Authentic Happiness Theory: Positive relationships and accomplishment.

The importance of positive relationships can also be traced back to early theories of personality. For example, Murray (1938) suggested a *need for affiliation* as a basic human need. Contemporary theories of well-being also include similar components. For example, Ryff (2014) lists *positive relationship with others* as a dimension in her model of psychological well-being, whereas Deci and Ryan (2000) describe *relatedness* as a basic human need in their Self-Determination-theory. Numerous studies have demonstrated the positive impact of social relationships in various contexts. Myers (2000) gives an overview on positive effects of close relationships (i.e., friendships and marriage), showing that they are generally linked to higher levels of well-being.

There are many predecessors for the pursuit of accomplishment as an important contributor to positive functioning. Again, Murray (1938) argued for a *need for achievement* as a basic human need. Similar components can also be found in the *Self-Determination-theory* (*competence* as a basic human need*;* Deci & Ryan, 2000), or in the theory of *basic values* (e.g., *achievement*; Schwartz et al., 2012). There is also empirical support for the notion that accomplishment (or related components) are

positively associated with well-being. For example, Lyubomirsky, King, and Diener (2005) present an overview of studies that reported positive relationships between subjective well-being and different indicators of success at work (i.e., income, supervisor ratings, etc.). Sagiv and Schwartz (2000) reported positive correlations between considering achievement an important value and mental health and positive affect (although no relationships with life satisfaction were found).

Finally, Seligman (2011) also redefined the pleasure component to *positive emotions*, which now also encompasses happiness and life satisfaction. He argues that each of these five components of *positive emotions* / *pleasure* (**P**LE), *engagement* (**E**NG), *positive relationships* (**R**EL), *meaning* (**M**EA), and *accomplishment* (**A**CC) are pursued for their own sake and, therefore, constitute the elements of well-being (forming the acronym *PERMA*). Since one of Seligman's criterion for adding an element to his Well-Being Theory is that "it contributes to well-being" (Seligman, 2011; p. 16), the endorsement of these five components could also be considered orientations or paths to well-being. This approach is especially relevant from an intervention perspective, since promoting these orientations could be used for fostering well-being.

The present study

The main purpose of this set of studies was the development and validation of two short scales for the subjective assessment of the endorsement of REL and ACC. We are not aiming for the development of a PERMA-measure (that would have to focus on whether these components are *present*), but want to provide two scales using the same methodology as the OTH (i.e., assessing the *endorsement* towards these components) that could be used along and compared with the OTH. However, despite that these two scales could be used together with the OTH-scales, they are

independent from them. Study 1 describes the development of the two short scales and presents information on their reliability and factorial, convergent, discriminant, and criterion validity. Study 2 examines the test-retest-reliability of the two scales after 1, 3, and 6 months. Study 3 examines the malleability of the endorsement of positive relationships and accomplishment in a placebo-controlled intervention study.

Study 1

Study 1 describes the development and initial validation of the two short scales for the assessment of the inclination to *positive relationships* (REL) and *accomplishment* (ACC) in a development and a replication sample. Additionally, their overlap with the three components of the Authentic Happiness theory will be tested. It was expected that they will show a comparable overlap as has been reported for the OTH in samples from German-speaking countries (Ruch et al., 2010; i.e., correlations around .30). Furthermore, the predictive power of the new scales as indicators of subjective, and psychological well-being (i.e., life satisfaction and flourishing) above and beyond the dimensions of the Authentic Happiness theory will be tested in the development sample, the replication sample, and a validation sample. We expect that both scales will have incremental validity in the prediction of well-being. Finally, we examined whether individual differences in REL and ACC also reflect differences in an individuals' self-reported choice of activities. For this purpose, we asked university students how much time they spend, or would like to spend, with activities related to these dimensions in different situations: On a typical day at the university, a leisure day, and an ideal day. We expect that their scores in REL and ACC will be associated with the amount of time spent with related activities.

Method

Participants

Three different samples were used for scale development ($N = 233$), replication ($N = 336$), and validation ($N = 125$). The sample characteristics are given in Table 1.

Instruments

For the development of the *Positive Relationships*- and the *Accomplishment*-scales, four independently working psychologists drafted 36 new, face-valid items (18 per scale) based on the descriptions given by Forgeard, Seligman, Jayawickreme, Kern, and Seligman (2011), and Seligman (2011). As a result, the accomplishment items encompassed having ambitions, experiencing mastery in own actions, and being achievement-oriented. The relationship items included valuing the presence of others, preferring to do things with other people, and considering "being on good terms" with others as important. Item examples are given as an online supplementary. All items are positively keyed and use a 5-point Likert-style scale (from 1 = *very much unlike me* to 5 = *very much like me*).

The *Orientations to Happiness* questionnaire (OTH; Peterson, Park, & Seligman, 2005; in the German adaption by Ruch, Harzer, Proyer, Park, & Peterson, 2010) consists of 18 items for the subjective assessment of the three orientations pleasure, engagement, and meaning. All items in the OTH are positively keyed and use a 5-point Likert-style scale (from 1 = *very much unlike me* to 5 = *very much like me*). A sample item is "My life serves a higher purpose." Peterson et al. (2005) and Ruch et al. (2010) reported satisfactory internal consistencies and stabilities and provided information on the factorial validity. The OTH is frequently used in research (e.g., Berthold & Ruch, 2014; Pollock, Noser, Holder, Zeigler-Hill, 2014; Ruch, Martínez-Martí, Heintz, & Brouwers, 2014; Von Culin, Tsukayama, & Duckworth, 2014) and is the standard measure for the pleasurable, engaged, and meaningful life in

Seligman's (2002) Authentic Happiness-theory (see Table 6 for information on reliability).

The *Satisfaction with Life Scale* (SWLS; Diener, Emmons, Larsen, & Griffin, 1985; in the German version used by Ruch et al., 2010) is a 5-item measure for the global, evaluative assessment of subjective well-being (i.e., one's satisfaction with his own life). The SWLS uses a 7-point Likert-style scale (from 7 = *strongly agree* to 1 = *strongly disagree*). A sample item is "In most ways, my life is close to my ideal." The SWLS is widely used in research and shows good psychometric properties (for an overview, see Pavot & Diener, 2008). Internal consistencies in the present samples were high (α = .80 - .90).

The *Flourishing Scale* (in the German version provided by Diener et al., 2010) is a one-dimensional 8-item measure for the subjective assessment of psychological well-being. It encompasses different aspects of human functioning such as self-esteem, purpose, and optimism. It uses a 7-point Likert-style scale (from 7 = *strongly agree* to 1 = *strongly disagree*). Diener et al. (2010) reported good psychometric properties; in the present sample internal consistencies were satisfactory (α = .75 - .87).

The *Flourishing Schedule* was utilized for this study to assess the amount of time participants spent with activities related to aspects of pleasure, engagement, meaning, positive relationships, and accomplishment in three different situations; on a day at the university, on a leisure day, or on an ideal day. A sample item (for a day at the university) is "What percentage of an average day at the university are you spending with the following activities?" (for pleasurable, engaging, meaningful activities, and activities related to relationships, and accomplishment). Participants

were asked to indicate the percentage of the time (0-100) they spent with activities related to each of the five dimensions.

Procedure

The development sample and the replication sample were recruited over the Internet (e.g., advertisement in forums and mailing lists,) or by means of leaflets in late 2011. Both samples were recruited in similar ways, but at different time periods. As an incentive, we offered individualized feedback on the results at the end of the study and course credit for students. The participants completed German versions of the *Positive Relationships* and *Accomplishment* scales, the OTH, the SWLS, and the Flourishing scale (only in the validation sample), on a web site affiliated with an institute of higher education.

Participants in the validation sample were psychology students who completed a paper-pencil version of the positive relationships- and accomplishment-scales, the OTH, the SWLS, the Flourishing scale, and the Flourishing Schedule, during an introductory psychology class. The students volunteered to participate and did not receive any sort of reimbursement for their participation. Descriptive statistics of all samples are given in Table 1.

Insert Table 1 about here

Data Analysis

All exploratory and confirmatory factor analyses were conducted with Mplus (Version 6.11; Muthén & Muthén, 2007) using a robust weighted least squares estimator (WLSMV). The main goal of the exploratory factor analyses was to have the most parsimonious solution (i.e., using as few factors as possible) that still reflects

the data well (i.e., shows an acceptable fit). For this purpose, we compared the fit of models with 1 to 3 factors (when analyzing the positive relationships and the accomplishment items), and 1 to 7 factors (when analyzing the new items together with the OTH-items). The factorial structure was assessed in the development and the replication samples, but not in the validation sample, since it consisted only of students. Three criteria were taken into account to evaluate model fit: Values ≥ .90 in the comparative fit index (CFI; Hu & Bentler, 1999), values ≤ .08 in the root mean square error of approximation (RMSEA; Brown & Cudeck, 1993), and values ≤ .08 in the standardized root mean square residual (SRMR; Hu & Bentler, 1999).

The selection of the items for the final version was based on the factor loadings (highest loading on the intended factor ≥ .40, and exceed cross-loadings by ≥ .20), their corrected item-total correlation (≥ .40), the consistency of the final scale (≥ .70), and their content.

Results

Preliminary Analyses

A first inspection of the OTH-items revealed that some formulations already seemed to address REL and/or ACC. Also, earlier analyses (Peterson et al., 2005; Ruch et al., 2010) showed secondary factor loadings for some of the items in the OTH. Therefore, one item for each of the OTH-scales was excluded from further analyses in order to reduce the conceptual overlap with the new scales[1]. For REL and ACC, we aimed at developing scales of comparable length as in the OTH.

[1] One item of the OTH was excluded since it also has an other-directed component, and a strong cross-loadings on engagement in the German OTH (see Ruch et al., 2010): (a) „In choosing what to do, I always take into account whether it will benefit other people“ (meaning); one item was excluded due to its strong secondary loading on pleasure (Ruch et al., 2010): (b) “In choosing what to do, I always take into account whether I can lose myself in it” (engagement); (c) Finally, we decided to leave the item (c) “For me, the good life is the pleasurable life” (pleasure) out of further analyses. While the decision on the exclusion of items was relatively clear for the other two scales, all items of the life of pleasure scale seemed appropriate and have low overlap with REL and ACC regarding the content. We decided on

In a first step, we conducted an exploratory factor analysis in the development sample for the 36 items for REL and ACC[2]. The first five Eigenvalues were 7.97, 5.32, 2.23, 1.60, and 1.46, respectively. When comparing the model-fit of a 1 to 3-factorial solution (i.e., when one of the scales would split into separate factors), the χ^2 improved significantly with the extraction of every additional factor. However, for the fit indices, the 2-factorial solution already mostly met the criteria, although the CFI-value was slightly below the threshold. Further, the extraction of additional factors would not have led to a strong improvement in the fit indices (see Table 2).

Insert Table 2 about here

Thus, two factors were extracted and rotated to the OBLIMIN criterion (delta = 0)[3]. Based on the criteria for the factor loadings, the corrected item-total correlations, the alpha of the total scale, and the content, the five best-fitting items per scale (out of the 18 initial items per scale) were selected. The German version of the items and a tentative English translation are given in the Appendix A.

Construct Validity: Analysis of the Final Version

In a next step, the items of the final version of the REL- and ACC-scales were subjected to a factor analysis in the development and the replication samples. In both samples, only two Eigenvalues exceeded unity: The Eigenvalues for the development/replication sample were 2.93/3.43, 2.48/2.05, 0.87/0.90, 0.84/0.76,

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this item since it seemed to have the comparatively strongest overlap among the other items of the pleasure scale.

[2] When conducting separate factor analyses for REL and ACC, for both scales one strong first factor emerged (Eigenvalues were 7.25/5.65, 1.51/1.83, 1.23/1.32 for REL, and ACC, respectively), thus, suggesting one-dimensionality of the scales.

[3] Peterson et al. (2005) used an orthogonal rotation when developing the OTH scale (as did Ruch et al. [2010] for the German version). However, we favored an oblique rotation due to theoretical considerations (overlap among the components). When comparing our findings with an orthogonally (VARIMAX) rotated solution, the findings were highly comparable though.

0.75/0.70, 0.55/0.58, 0.48/0.47, 0.44/0.42, 0.36/0.36, and 0.32/0.32. When comparing the model-fit of a 1 to 3-factorial solution, again, the χ^2 improved significantly with the extraction of every additional factor. However, the 2-factorial solution already met the criteria in both samples, whereas the extraction of an additional factor would not have yielded strong improvements in the fit indices. Therefore, two factors were extracted in both samples and rotated to the OBLIMIN-criterion (delta = 0). Factor loadings of the exploratory factor analysis are shown in Table 3.

Insert Table 3 about here

Table 3 shows that the expected pattern was obtained: All items had their highest loadings on the intended factor (all ≥ .40) and no noteworthy cross-loadings were found (all ≤ .20). Tucker's Phi-coefficients indicated that the loading matrices were highly similar across the two samples; REL: φ = .99 and A: φ = .97). Finally, the factorial solution received further supported in a confirmatory factor analysis. A two-factor model assuming correlated factors with no secondary loadings and uncorrelated error variances fitted well in both samples (see Table 1).

Construct Validity: Convergent and Divergent Validity

In a third step, we examined the overlap (or distinctiveness) of the new scales with the OTH. The 15 items of the reduced OTH and the items of the new scales were subjected to a joint factor analysis. The first seven Eigenvalues for the development/replication sample were 4.90/6.54, 2.83/2.81, 2.30/1.75, 1.78/1.50, 1.62/1.34, 1.07/1.14, and 1.04/1.00. The goodness of fit was compared for the extraction of 1 (one general factor) to 7 factors (e.g., when REL and ACC would split into two factors each), as shown in Table 4.

Insert Table 4 about here

Table 4 shows that in the development sample, only the models assuming five or more factors met the criteria. In the replication sample, also a 4-factorial solution would have been acceptable. In both samples, the fit indices of the models with 6 or 7 factors were highly comparable to those of the 5-factor model, and comparatively smaller increases in goodness of fit were observed in models including more than five factors, although, as for the previous models, the χ^2 improved significantly with the extraction of every additional factor. We decided in favor for the most parsimonious model that could theoretically be explained best, extracted five factors, and rotated them to the OBLIMIN-criterion. The five factors were moderately intercorrelated, with somewhat higher correlation coefficients in the replication sample (development sample: .00 [PLE and MEA] to .30 [ACC and ENG], median = .14; replication sample: .14 [ENG and REL] to .47 [accomplishment and meaning], median = .30). The factor loadings of the exploratory factor analysis are shown in Table 5.

Insert Table 5 about here

Table 5 shows that all items for the assessment of REL and ACC had their highest loadings on the intended factor. However, item no. 22 in the development sample and item no. 24 in the replication sample did not fully meet the other criteria. Also, most of the items for the assessment of PLE, ENG, and MEA fulfilled the criteria. One item (no. 16, pleasure) had smaller loadings on the intended factor than expected in both samples, whereas other items did not fulfill all criteria in one of the

samples (i.e., items no. 3 [PLE], 10 [ENG], and 14 [MEA] in the development sample, and items no. 1 and 4 [both ENG] in the replication sample. Overall, the factor solution was considered acceptable. Tucker's Phi coefficients indicated that the factor matrices were similar across the two samples (all $\varphi \geq .90$), except for engagement ($\varphi = .88$). Thus, the factor matrices showed at least a *fair* similarity between the samples (Lorenzo-Seva & ten Berge, 2006).

A confirmatory factor analysis, assuming a five-factor model with correlated factors, no secondary loadings and uncorrelated error variances suggested a good fit in the replication sample, whereas in the development sample the CFI value was slightly below the cut off (CFI = .86; see Table 4). Since the other fit indices met the criteria, the solution was considered acceptable.

Descriptive Statistics

We computed total scores for the REL- and ACC-scales along with the OTH-scales by averaging the assigned items. Coefficients for skewness and kurtosis showed that all scales were normally distributed (skewness ranged from -0.15 to -0.80 in the development sample, and from -0.06 to -0.58 in the validation sample. Kurtosis ranged from -0.46 to 1.04 in the development sample, and from -0.59 to 0.53 in the replication sample). Descriptive statistics and scale intercorrelations for both samples are given in Table 6.

Insert Table 6 about here

Table 6 shows that the REL and ACC-scales had acceptable internal consistencies ($\alpha > .70$), and all items had good corrected item-total correlations (all > .40). The means and standard deviations were comparable between the samples. REL

and ACC existed independently from participants' sex but were associated with younger age. Also, there were some small, but expectable correlations to other demographics: Those with higher scores in REL were more frequently in a relationship at the time when completing the survey than those with low scores, and the educational level was positively related to ACC (only in the replication sample, though). Results for the OTH-scales were comparable to earlier findings (Ruch et al., 2010) in terms of means, standard deviations, internal consistencies, and associations with demographics. The means and standard deviations of REL and ACC were comparable to those of the OTH-scales, although the new scales had numerically higher mean scores. Overall, the scales were moderately intercorrelated; numerically larger coefficients were observed in the replication sample.

Time spent with activities related to relationships and accomplishment

For assessing how REL and ACC relate to everyday behavior, the participants in the replication sample completed the REL and ACC-scales, the OTH, and the Flourishing-Schedule. The correlations of REL, ACC, and the OTH-scales with the amount of time spent in activities related to these dimensions are given in Table 7.

Insert Table 7 about here

Table 7 shows that there was a good convergence between individual expressions in REL, ACC, and the OTH-scales with the amount of time people spent or would like to spend with activities related to these dimensions. For example, those students with greater inclination to REL also indicated dedicating more time to fostering relationships on a typical day at the university, on a day dedicated to leisure time activities, and that this is also what they would like to do on an ideal day. Of

course, there were also exceptions. ENG was not related to the time spent with engaged activities on an ideal day, and PLE was neither related to the amount of time spent with pleasurable activities on a day at the university, nor on an ideal day; this might be explained by the fact that days at the university are not prototypical situations to engage in pleasurable activities, whereas the relation to the time spent with pleasurable activities on an ideal day might be reduced by ceiling effects (48% of the participants indicated the highest possible amount of time).

Relationship to life satisfaction and flourishing

We examined the associations of REL and ACC with life satisfaction and flourishing in a cross-sectional design computing their associations while controlling for age and sex. Furthermore, we tested whether REL and ACC add to the prediction of life satisfaction and flourishing (as criteria) above and beyond the impact of PLE, ENG, and MEA using multiple stepwise regression analyses; see Table 8.

Insert Table 8 about here

Table 8 shows that both new scales and the OTH-scales were positively associated with life satisfaction and flourishing (with the exception of MEA in the development sample). ACC was the strongest predictor of flourishing, and, together with ENG, the strongest predictor of life satisfaction across all samples. Hierarchical regression analyses (criterion = life satisfaction / flourishing; step 1 = sex, age; step 2 = PLE, ENG, MEA; step 3 = REL, ACC; method = enter) revealed that the new scales explained additional variance in the prediction of life satisfaction (ΔR^2 = .04 to .08) and flourishing (ΔR^2 = .02 to .12) in all samples above the OTH scales. Again, ACC was one of the strongest predictors and contributed to the prediction in all

samples. The results for REL, ENG, and PLE were rather mixed with contributions in selected samples only. Finally, MEA contributed to the prediction of flourishing only, but not life satisfaction. When changing the rank order of steps 2 and 3 and testing for effects of the OTH-scales above the influences of REL and ACC, similar increases in explained variance were obtained (life satisfaction: ΔR^2 = .02 to .09; flourishing: ΔR^2 = .09, in both samples).

Discussion

Study 1 describes the development and initial assessment of two short scales for the assessment of positive relationships (REL) and accomplishment (ACC). Both scales were reliable (internally consistent) and demonstrated factorial validity in exploratory and confirmatory factor analyses in two different samples. Data on convergent, discriminant, and criterion validity of the scales are also encouraging. It was shown that individual scores in REL and ACC went along with the amount of the time participants spent with activities related to positive relationships and accomplishment. REL and ACC are moderately correlated with each other and the OTH-scales; there was an overlap, but far from indicating redundancy. Both new scales correlated positively with different indicators of well-being (i.e., life satisfaction and flourishing) and explained additional variance in the prediction of well-being, above the contribution of basic demographics and the OTH-scales. Finally, REL and ACC showed the expected relations to demographics; e.g., high scores in ACC went along with a higher education level (in one of two samples, which might be due to the fact that the replication sample was more diverse in terms of educational levels), and individuals who are currently in a romantic relationship demonstrated greater expressions of REL.

Study 1 provides initial support for the reliability and validity of the scales for the assessment of REL and ACC, and showed that they can be used together with the OTH-scales. Overall, the factor loadings of the items assessing PLE, ENG, and MEA were comparable to earlier findings (Ruch et al., 2010). Most items loaded on the intended factors and only had negligible secondary loadings. However, some items that already showed high secondary loadings in previous studies (see Ruch et al., 2010) also did so in the current study: Items 4 (ENG) and 16 (PLE) loaded higher on the MEA- and ACC-factors than on the intended factor in one of the samples tested. This warrants further consideration in future studies.

For increasing precision in the constructs and reducing overlap among them, we have reduced the OTH-scales by one item each. Although this might limit the comparability with previous findings to a certain degree, we believe that the concepts are still adequately described with the reduced scales (which, in fact, are empirically highly comparable to the original scales; all $r > .95$), but that the distinction among pleasure, engagement, and meaning, and positive relationships and accomplishment is sharpened.

Finally, the present study replicated previous findings on the negative relationship of PLE and ENG to participants' age (Peterson et al., 2005; Ruch et al., 2010), findings for REL and ACC were in the same direction. Although these associations are generally small, the current data do not allow for a conclusion whether REL, ACC, PLE, ENG, and MEA do generally decline with age, or whether other orientations to happiness or well-being, which are currently not included in this framework, might grow in importance with age. However, more research on possible age-effects is needed, and future studies should also focus on examining these orientations in elderly people (cf. Ruch, Proyer, & Weber, 2009).

Study 2

Study 2 aimed at extending the findings on the reliability of the positive relationships (REL) and accomplishment (ACC) scales by examining their test-retest correlations. Earlier studies found that the OTH-scales pleasure (PLE), engagement (ENG), and meaning (MEA) were stable across time: Ruch and colleagues (2010) reported test-retest-reliabilities ≥ .70 for PLE and MEA, and values ≥ .60 for ENG in three and six months intervals, respectively. For examining whether this also holds true for the new scales and replicating earlier findings, we assessed the test-retest reliabilities of REL and ACC, and also included the OTH-scales. We expected that similar coefficients would be obtained for REL and ACC (around .70).

Method

Participants

A total of $N = 394$ participants took part in study 2. Sample characteristics are given in Table 1.

Instruments

As in study 1, the OTH questionnaire (reduced by one item for each scale), and the newly developed scales for the assessment of positive relationships and accomplishment, were used. Internal consistencies were comparable to those reported in study 1 and ranged from $\alpha = .64$ (ENG) to $\alpha = .74$ (REL).

Procedure

All participants attended an online training program for character strengths (starting in spring 2012) and completed online versions of the REL-, ACC-, and the OTH-scales on four different time periods: Before an online-intervention, and one-, three-, and six months after the intervention. Participants were instructed to complete a placebo control exercise (i.e., writing on early childhood memories, Seligman,

Steen, Park, & Peterson, 2005) on every day for one week. No effects of this exercise on well-being, depression, REL, ACC, or the Authentic Happiness Theory-components were expected (e.g., Seligman et al., 2005; Gander et al., 2013).

Results

The test-retest correlations for the OTH-scales and the REL and ACC scales are shown in Table 9.

Insert Table 9 about here

All test-retest correlations were above or close to .70 for up to six months, and comparable to those of the OTH-scales, which were also in line with earlier findings (Ruch et al., 2010).

Discussion

The scales for the assessment of REL and ACC demonstrated acceptable test-retest correlations for up to six months and can be considered to be stable across the tested time period. However, since all participants underwent a placebo control intervention from which no effects are expected, it cannot be ruled out that this might have influenced the results nonetheless. Therefore, the reported test-retest correlations have to be regarded as lower-bound estimates of the stability.

Study 3

The main aims of Study 3 were testing the malleability of the endorsement of positive relationships (REL) and accomplishment (ACC), and examining whether addressing them with an intervention leads to an increase in subjective well-being (i.e., an increase in life satisfaction and positive affect, and a decline in negative affect). Amongst others, Peterson and colleagues (2005, 2007) and later Buschor,

Proyer, and Ruch (2013) provided empirical evidence for the expected important role of the endorsement of pleasure (PLE), engagement (ENG), and meaning (MEA) for life satisfaction. They found that the three orientations to happiness explained additional variance in life satisfaction—above and beyond self- and peer-rated character strengths. Therefore, Buschor et al. (2013) concluded, "[…] it might be fruitful to consider the three orientations as potential means for experimentally enhancing life satisfaction and well-being" (p. 124). Giannopoulos and Vella-Brodrick (2011) conducted such a study, in which 218 participants were randomly assigned to one of six conditions (four intervention conditions, two control conditions). The participants in the intervention conditions were instructed to write down three things related to PLE, ENG, or MEA (conditions 1-3), or one thing related to each of the orientations (condition 4) on a daily basis for a week. Participants in the control conditions wrote on three daily events (condition 5; placebo control) or did not receive any task (condition 6). Participants completed at a time point before the intervention started, as well as one week, and two weeks after the intervention a well-being measure (the *Mental Health Continuum – Short Form* [MHC-SF; Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2011], a composite measure of emotional, social, and psychological well-being). The authors reported that all intervention conditions showed larger increases in well-being than the control groups, and therefore gave first empirical evidence for the causal influence of PLE, ENG, and MEA on well-being, and showed that addressing the endorsement of these components might indeed be a potent mean to change well-being for the better.

To the best of the authors' knowledge, there is no intervention study based on positive relationships and accomplishment. In study 3, we instructed the participants in an intervention condition to write down their daily experiences of REL, ACC, PLE,

ENG, and MEA for a week and assessed participants' scores in subjective well-being (life satisfaction, positive and negative affect), the REL-, ACC-, and OTH-scales before the intervention, after the intervention, and two- and four weeks after the intervention. We used this kind of intervention (i.e., variants of the "three good things"-exercise; see Seligman et al., 2005), since they can easily be incorporated in an individual's everyday life what is believed to increase the effectiveness of an intervention (Sin & Lyubomirsky, 2009). We hypothesized that the participants in the intervention condition report stronger increases in subjective well-being, and in all REL-, ACC-, and OTH-scales, than in a placebo control condition.

Method

Participants

A total of 112 participants were randomly assigned to the intervention or the placebo control condition and 67 participants completed the assigned exercise and all four assessments. We excluded 16 participants because they conducted the exercises during their holidays, what might have counteracted the incorporation of the exercises in everyday life, and was expected to influence ratings of positive and negative affect[4]. Descriptive statistics for the final sample ($N = 51$) are given in Table 1.

The intervention condition consisted of $n = 29$ (20 women) participants and the placebo control condition consisted of $n = 22$ (12 women) participants. The conditions did not differ regarding their sex ratio (χ^2 [1, $N = 51$] = 1.11, $p = .28$), age (t[49] = 0.72, $p = .48$), marital status (χ^2 [2, $N = 51$] = 2.36, $p = .31$), education (χ^2 [2, $N = 51$] = 2.11, $p = .38$), or dropout rate (χ^2 [1, $N = 112$] = 1.76, $p = .18$).

Instruments

[4] Including these participants in the analyses would not yield large changes in the results. However, smaller effects and a less clear pattern would be obtained.

As in study 1, the *Satisfaction with Life Scale* (SWLS), the *Orientations to Happiness*-questionnaire (OTH), and the scales for the assessment of REL and ACC were used.

Additionally, the *Positive and Negative Affect Schedule* (PANAS, Watson, Clark, & Tellegen, 1988; in the German adaption by Krohne, Egloff, Kohlmann, & Tausch, 1996) was used. The PANAS assesses the intensity of positive and negative affect with 10 items each. Watson et al. (1988) reported good psychometric properties. In the present study, the PANAS asked participants about their feelings during the past week.

Procedure

Participants were recruited in the same way as in Study 1 (development and replication samples) in late 2011. The only inclusion criterion was a minimum age of 18. All participants received individualized feedback via email at the end of the study. After participants answered basic demographic questions online, we randomly assigned them to the intervention or to the placebo control condition, and they received a paper-pencil version of the pre- and posttest questionnaires (the SWLS, the PANAS, the OTH, and the REL- and ACC-scales), and the instructions for the exercises via mail. The exercise had to be completed every day for one week. On the last day of the week, participants completed the posttest assessments of all scales, and sent all material back via mail (in a post-paid envelope). Two and four weeks after the completion of the exercise, the participants were reminded via e-mail to complete the follow-up assessments online. Participants received written instructions and a form for completion of their assignment. The instructions for the exercises were as follows:

Intervention exercise (abbreviated)*:* "Every night for one week, set aside 15 minutes before you go to bed. Think back of the present day and write down all your

memories related to the five areas of pleasure, engagement, meaning, positive relationships, and accomplishment" (followed by a short description of all components).

Placebo control exercise (abbreviated)*: "*Every night for one week, set aside 15 minutes before you go to bed. Think of one route you have covered on that day (e.g., the route to work, or the route to the supermarket) and describe this route as detailed as possible in written form. Think of the places you have passed, and describe what you have noticed and whether there was something unusual."

Data Analysis

In the first step, we computed a planned contrast comparing the pretest scores with the scores of the later measurement periods for all dependent variables *within* each condition; one condition · two time periods (pretest vs. posttest, 2 weeks, and 4 weeks after the intervention), for the REL-, ACC-, and OTH-scales. In the second step, we conducted the same planned contrasts comparing the pretest scores with the scores of the later measurement periods *between the* conditions; two conditions · two time periods (pretest vs. posttest, 2 weeks, and 4 weeks after the intervention).

Results

An inspection of the mean scores (means and standard deviations are given as an online supplementary; Appendix B) of participants in the intervention condition showed that most scales increased immediately after the intervention, and remained more or less stable afterwards or increased further, but did not return to baseline levels. Only the positive affectivity scores peaked at posttest and returned to baseline level four weeks after the intervention. In contrast, the changes in the placebo control condition were smaller in size and did not show a clear pattern. Results for planned contrasts are given in Table 10.

Insert Table 10 about here

An analysis of the changes *within* the conditions revealed that, as expected, the scores in REL, ACC, and the OTH-scales increased in the intervention group over time. Also, increases in life satisfaction and decreases in negative affectivity were reported for the intervention condition, whereas a marginally significant increase for positive affectivity was found. In the placebo condition, there were no changes in the variables of interest, except for REL, where also an increase was reported.

When comparing the changes *between* conditions, we found that ACC increased in the intervention condition compared to the placebo control condition, whereas the results for ENG and MEA approached significance. These changes went along with significant increases in subjective well-being: In the intervention condition, larger changes in life satisfaction, positive-, and negative affectivity were reported than in the placebo control condition.

Discussion

Study 3 showed that the scales for REL and ACC, and the OTH-scales are sensitive to detect changes, elicited by an intervention targeting these characteristics: In the intervention condition, all scales increased in the intended direction. For ACC, the increases in the intervention condition exceeded those in the placebo control condition, whereas for ENG and MEA only marginally significant results were obtained.

The second main finding of Study 3 was that it provided initial evidence for a causal relationship of REL, ACC, and the Authentic Happiness Theory-dimensions with subjective well-being: Addressing these characteristics jointly in an intervention

exercise led to increases in subjective well-being compared to a placebo control condition. Thus, basing an intervention on these components might be a fruitful approach for the development of intervention studies. This has received support from a study by Giannopoulos and Vella-Brodrick (2011) and recently also by Proyer, Gander, Wellenzohn, and Ruch (2016). The increases in subjective well-being were accompanied by relative increases in ACC, and a (marginally significant) trend towards an increase in ENG and MEA, but no changes in REL and PLE. This absence of changes might both be due to (small) changes in the same direction in the placebo control condition, but it is unclear whether this change occurred due to the placebo control exercise, some external factors, or is just coincidental. Since the current study cannot answer these questions, further research on this topic is needed.

Also, some limitations of study 3 have to be acknowledged: First, it can be assumed that some participants were aware of the parallels between the used measures and the instructions for the exercise. Second, the instruction to focus on REL, ACC, and the Authentic Happiness Theory-dimensions simultaneously does not allow for an examination of the influences of each of these dimensions on well-being. Therefore, we are planning to conduct an intervention study that contrasts all these dimensions in order to achieve a deeper understanding of their associations with well-being and to address questions of causality. Finally, it needs mentioning that the instruction and intervention was pretested in smaller samples before application, but still could be further improved.

General Discussion

The three studies showed encouraging results for the psychometric properties of the short scales for the assessment of the endorsement of positive relationships (REL) and accomplishment (ACC), and provided evidence for their factorial validity

(when used independently and also in combination with the OTH-scales), their convergent and divergent validity, their internal consistency and stability, and also for their sensitivity to change.

Although the REL- and the ACC-scales shared some variance with the OTH-scales, they existed independently and the intercorrelations did not indicate redundancy. Although from a theoretical perspective it can be expected that that the scales correlate with each other empirically, a further refinement of the scales would be desirable when used together with the OTH. This could be accomplished by reformulating certain items to further decrease conceptual overlap with the new scales and each other, particularly for ENG and ACC. Nonetheless, the findings of the presented studies suggest that the REL- and ACC-scales offer a valuable addition to the OTH-scales, which might be especially relevant in intervention settings: First, the results of the intervention study provide some initial evidence that an intervention based on strengthening the focus on REL and ACC might also be effective. These findings warrant further consideration in future studies. Secondly, the new scales might offer a valuable extension of research that has been based on Seligman's (2002) Authentic Happiness theory. Even if the two scales cannot be seen as a measure for Seligman's (2011) PERMA-dimensions, because of certain changes he proposed (e.g., positive emotion vs. the pleasurable life), it may be useful to complement standard assessments with the OTH (Peterson et al., 2005) with these two scales. One might argue that this would provide a broader perspective on a person's well-being and advance the literature on the contribution of additional factors in the understanding of outcome variables such as subjective well-being or flourishing.

Implications for Research and Practice

The new scales might be especially useful from an intervention perspective. Assuming that the pursuit of positive relationships and accomplishment reflects two hitherto neglected pathways to well-being, the knowledge of additional, distinguishable ways to well-being might allow targeting well-being from different angles. Also, the REL- and ACC-scales might be helpful for increasing the person × intervention-fit: Knowing one's profile in the OTH-, REL-, and ACC-scales might indicate in what domains someone has more "room for change" and should therefore be targeted by an intervention. There is one study (Giannopoulos & Vella-Brodrick, 2011) where moderating effects of PLE, ENG, and MEA on interventions based on these components were found. It can be hypothesized that the baseline scores in REL and ACC might have similar effects. Alternatively, following the idea of "signature strengths" (Peterson & Seligman, 2004), fostering one's preferred way to well-being might also be another effective approach for increasing well-being. However, this has to be addressed in future studies. It should be examined whether interventions based on each of the five components lead to an increase in well-being, and whether there are moderating effects of the baseline scores on intervention effectiveness.

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Table 1

Descriptive Statistics of all Samples Covered in the three Studies

	Study 1			Study 2	Study 3
	Sample 1	Sample 2	Sample 3		
N	233	336	125	394	51
Women %	74.2%	81.5%	84.8%	74.6%	62.7%
Age					
Mean	30.30	38.09	22.87	47.00	27.98
Standard deviation	14.64	13.52	4.15	12.10	11.58
Range	18–85	16–80	19-47	18–77	18–69
Education					
University	36.0%	45.0%	100.0%	63.6%	23.6%
Diploma	60.4%	19.9%	-	19.7%	60.8%
Vocational training	3.7%	25.9%	-	13.5%	15.7%
Elementary school	-	8.4%	-	3.2%	-
Did not complete school	-	0.9%	-	-	-
Relationship status					
In a relationship	53.0%	–	–	–	51.1%
Single	44.2%	–	–	–	46.9%
Divorced / in separation	2.8%	–	–	–	2.0%

Note. An em dash (–) indicates that data were not collected. University = University or university of applied sciences; Diploma = Holding a diploma allowing to attend a university or a university of applied sciences; Sample 1 = Development sample; Sample 2 = Replication Sample; Sample 3 = Validation Sample.

Table 2

Exploratory and Confirmatory Factor Analysis for Positive Relationships and Accomplishment-Items

		χ^2	*df*	χ^2 / *df*	*p*	CFI	RMSEA	SRMR
EFA (36-items version)								
	1-factor	2307.45	594	3.88	< .001	.52	.12 [.11 - .12]	.15
	2-factor	1071.58	559	1.92	< .001	.86	.07 [.06 - .07]	.08
	3-factor	936.12	525	1.78	< .001	.88	.06 [.05 - .07]	.07
EFA (10-item version)								
Sample 1	1-factor	481.58	35	13.76	< .001	.42	.23 [.22 - .26]	.18
	2-factor	68.45	26	2.63	< .001	.95	.08 [.06 - .11]	.05
	3-factor	39.29	18	2.18	= .003	.97	.07 [.04 - .10]	.04
Sample 2	1-factor	483.02	35	13.80	< .001	.68	.20 [.18 - .21]	.14
	2-factor	76.02	26	2.92	< .001	.96	.08 [.06 - .10]	.04
	3-factor[a]	36.18	18	2.01	= .007	.99	.06 [.03 - .08]	.03
CFA (10-item version)								
Sample 1	2-factor	82.12	34	2.42	< .001	.94	.08 [.06 - .10]	.07
Sample 2	2-factor	73.60	34	2.16	< .001	.97	.06 [.04 - .08]	.05

Note. $N_{Development}$ = 233, $N_{Validation}$ = 336. RMSEA = root mean square error of approximation. SRMR = standard root mean square residual. EFA = Exploratory Factor Analysis, CFA = Confirmatory Factor Analysis.

[a] could not be computed due to a negative residual variances

Table 3

OBLIMIN Rotated Factor Loadings (EFA) of Positive Relationships and Accomplishment in the Two Samples.

	REL		ACC	
Items	S1	S2	S1	S2
Positive Relationship				
4	**.69**	**.71**	-.11	.00
9	**.78**	**.78**	.01	.06
14	**.57**	**.53**	-.10	-.09
19	**.56**	**.70**	.20	-.08
24	**.73**	**.77**	.04	.04
Accomplishment				
5	.00	-.02	**.71**	**.65**
10	-.08	.10	**.54**	**.46**
15	-.02	-.07	**.80**	**.70**
20	.09	.07	**.54**	**.66**
25	.03	.02	**.61**	**.64**

Note. The expected loadings are printed in boldface. $N_{\text{Development}} = 233$, $N_{\text{Validation}} = 336$. REL = Positive Relationships, ACC = Accomplishment, S1 = Development sample, S2 = Replication sample.

Table 4

Model Fit of Exploratory and Confirmatory Factor Analyses for the Items for Positive Relationships and Accomplishment Together with the OTH-Items

	χ^2	*df*	χ^2 / *df*	CFI	RMSEA [90% CI]	SRMR
			EFA			
Development sample						
1-factor	1153.37	275	4.19	.50	.12 [.11 - .12]	.13
2-factor	841.54	251	3.35	.66	.10 [.09 - .11]	.10
3-factor	577.58	228	2.53	.80	.08 [.07 - .09]	.07
4-factor	457.20	206	2.22	.86	.07 [.06 - .08]	.06
5-factor	310.59	185	1.68	.93	.05 [.04 - .06]	.05
6-factor	268.15	165	1.63	.94	.05 [.04 - .06]	.04
7-factor	225.49	146	1.54	.95	.05 [.04 - .06]	.04
Replication sample						
1-factor	1585.67	275	5.77	.65	.12 [.11 - .16]	.11
2-factor	870.67	251	3.47	.84	.09 [.08 - .09]	.08
3-factor	666.24	228	2.92	.88	.08 [.07 - .08]	.06
4-factor	521.34	206	2.53	.92	.07 [.06 - .08]	.05
5-factor	406.16	185	2.20	.94	.06 [.05 - .07]	.04
6-factor	330.54	165	2.00	.96	.06 [.05 - .06]	.04
7-factor	268.44	146	1.84	.97	.05 [.04 - .06]	.03
			CFA			
Development sample	511.13	265	1.93	.86	.06 [.06 - .07]	.08
Replication sample	621.00	265	2.34	.91	.06 [.06 - .07]	.07

Note. $N_{\text{Development}} = 233$, $N_{\text{Validation}} = 336$. EFA = Exploratory Factor Analysis, CFA = Confirmatory Factor Analysis. RMSEA = root mean square error of approximation. SRMR = standard root mean square residual.

Table 5

OBLIMIN Rotated Factor Loadings (EFA) for Positive Relationships, Accomplishment, Pleasure, Engagement, and Meaning in the Two Samples.

	REL		ACC		PLE		ENG		MEA	
Items	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
Positive Relationships										
16	**.65**	**.67**	-.15	-.01	.11	.10	-.04	-.02	.09	.04
17	**.76**	**.77**	-.06	.04	.02	.00	.03	-.07	.18	.13
18	**.57**	**.49**	-.12	-.21	.01	.01	.09	.21	-.13	.07
19	**.59**	**.72**	.24	.02	-.02	-.06	-.07	.07	-.06	-.17
20	**.75**	**.75**	.07	.04	.00	.09	.03	-.01	-.13	.01
Accomplishment										
21	-.02	.03	**.68**	**.63**	.16	.10	-.11	-.18	.11	.11
22	-.13	.09	**.48**	**.31**	.22	.18	.05	.11	.05	-.04
23	-.02	.01	**.74**	**.74**	.04	-.05	.13	.10	.02	-.02
24	.05	.07	**.40**	**.41**	-.03	.15	.33	.21	.07	.14
25	.04	.07	**.63**	**.51**	-.08	.07	.15	.16	-.13	.00
Pleasure										
3	.27	.03	-.14	-.05	**.50**	**.65**	.05	.00	-.01	.10
8	-.02	-.01	.09	.16	**.50**	**.62**	.14	-.03	.17	.13
13	.09	.07	.18	.03	**.57**	**.59**	-.09	.13	-.05	-.21
15	.00	.10	.08	-.04	**.62**	**.59**	.02	-.06	-.08	-.06
16	-.13	-.07	.07	-.05	**.29**	**.24**	.16	.15	.17	.33

(continued)

Table 5 (continued)

	REL		ACC		PLE		ENG		MEA	
Items	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
					Engagement					
1	-.02	.08	-.20	-.12	.09	-.08	**.50**	**.34**	.21	.24
4	.06	-.04	.29	.52	.00	.05	**.50**	**.11**	.08	.20
6	.03	.07	.09	-.07	.08	.02	**.54**	**.67**	-.04	.06
7	.02	-.01	.02	.21	-.02	.00	**.75**	**.71**	.01	.04
10	-.13	-.21	.04	.06	-.13	.21	**.26**	**.42**	.01	.06
					Meaning					
2	-.03	-.07	-.10	-.03	.00	.03	.08	.03	**.90**	**.77**
11	.16	.10	.24	.04	-.14	-.08	-.05	-.06	**.54**	**.71**
12	.05	.02	.08	.07	.07	.04	.07	.14	**.73**	**.71**
14	.11	.12	.36	.13	-.21	.04	.02	.04	**.51**	**.64**
17	-.04	-.15	-.03	-.05	.07	.05	-.20	-.05	**.55**	**.43**

Note. The expected loadings are printed in boldface. $N_{\text{Development}} = 233$, $N_{\text{Validation}} = 336$. REL = Positive Relationships, ACC = Accomplishment, PLE = Pleasure, ENG = Engagement, MEA = Meaning. S1 = Development sample, S2 = Replication sample.

Table 6

Descriptive Statistics and Intercorrelations of Positive Relationships, Accomplishment, Pleasure, Engagement, and Meaning in the Two Samples

	REL		ACC		PLE		ENG		MEA	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
M	3.58	3.48	3.72	3.63	3.37	3.25	3.23	3.20	3.14	3.17
SD	0.71	0.80	0.63	0.66	0.58	0.66	0.58	0.65	0.79	0.83
$CITC_{min}$	.44	.44	.42	.40	.23	.25	.17	.28	.37	.28
$CITC_{max}$	.60	.65	.60	.51	.44	.54	.53	.59	.64	.63
$CITC_{median}$	.53	.58	.46	.48	.40	.42	.38	.39	.53	.60
α	.75	.79	.73	.71	.62	.67	.61	.67	.76	.76
Intercorrelations										
ACC	.11	.24***								
PLE	.20**	.33***	.23***	.43***						
ENG	.09	.16**	.37***	.53***	.15*	.35***				
MEA	.16*	.15**	.29***	.45***	.07	.33***	.28***	.46***		

(continued)

Table 6 (continued)

	REL		ACC		PLE		ENG		MEA	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
age	-.17**	-.14*	-.39***	-.20***	-.29***	-.09	-.01	-.21***	-.09	.09
sex	.09	.04	-.03	.02	.13	-.01	-.03	-.07	.05	.00
education	-.04	-.04	-.01	.19***	-.10	-.03	.17*	.07	.06	.08
partnership	.20**		.07		.11		.11		.03	

Note. $N_{\text{Development}} = 233$, $N_{\text{Validation}} = 336$. REL = Positive Relationships, ACC = Accomplishment, PLE = Pleasure, ENG = Engagement, MEA = Meaning. S1 = Development sample, S2 = Replication sample. Education (1 = not finished compulsory school to 5 = university degree), partnership = partnership status (0 = single; 1 = in a partnership).
* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 7

Correlations Between the Positive Relationships, Accomplishment, Pleasure, Engagement, and Meaning With the Time Spent With Activities Related to the Respective Components

	Flourishing-Schedule				
	REL-time	ACC-time	PLE-time	ENG-time	MEA-time
Day at the University	.22*	.19*	.09	.32***	.23***
Leisure Day	.35***	.18*	.20*	.28**	.32***
Ideal Day	.44***	.22*	.04	.11	.20**

Note. $N = 125$. REL = Positive Relationships, ACC = Accomplishment, PLE = Pleasure, ENG = Engagement, MEA = Meaning.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 8

Partial Correlations (corrected for sex and age) and Hierarchical Regression Analysis Summary for Positive Relationships, Accomplishment, Pleasure, Engagement, and Meaning Predicting Life Satisfaction and Flourishing

	Life Satisfaction			Flourishing	
	S 1	S 2	S 3	S 2	S 3
Partial Correlations (Corrected for Sex and Age)					
PLE	.16*	.31***	.29**	.38***	.27**
ENG	.30***	.29***	.41***	.48***	.36***
MEA	.11	.21***	.29**	.48***	.34***
REL	.25***	.17**	.21*	.24**	.35***
ACC	.30***	.40***	.40***	.52***	.50***
Regression					
Step 1 (ΔR^2)	.00	.00	.01	.02	.01
Sex (β)	-.02	-.03	.02	.03	-.08
Age (β)	.13*	.12*	.08	.11	.14
Step 2 (ΔR^2)	.11***	.13***	.23***	.32***	.27***
PLE (β)	.07	.15*	.11	.12	.02
ENG (β)	.20**	.05	.25**	.21*	.21*
MEA (β)	-.04	-.02	.11	.20**	.19*
Step 3 (ΔR^2)	.08***	.05***	.04*	.02*	.12***
REL (β)	.22***	.05	.11	.08	.23**
ACC (β)	.23**	.31***	.20*	.16*	.31**

Note. Coefficients of the final model (step 3) are given. $N_{Development}$ = 217, $N_{Validation}$ = 336, $N_{Sample3}$ = 126. REL = Positive Relationships, ACC = Accomplishment, PLE = Pleasure, ENG = Engagement, MEA = Meaning.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 9

Test-Retest-Reliabilities for Positive Relationships, Accomplishment, Pleasure, Engagement, and Meaning.

	1 month	3 months	6 months
N	349	308	253
REL	.75	.73	.78
ACC	.68	.69	.69
PLE	.73	.69	.74
ENG	.71	.68	.70
MEA	.73	.73	.73

Note. REL = Positive Relationships, ACC = Accomplishment, PLE = Pleasure, ENG = Engagement, MEA = Meaning.
All p-values < .001.

Table 10

Planned Comparisons of the Two Conditions at the Four Different Time Periods for Satisfaction with Life, Positive and Negative Affectivity, Positive Relationships, Accomplishment, Pleasure, Engagement, and Meaning.

	Within condition				Between conditions	
	IC		PCG		IC vs PCG	
	$F[1, 28]$	η^2	$F[1, 22]$	η^2	$F[1, 50]$	η^2
Intervention						
REL	5.12*	.16	3.03*	.13	0.40	-
ACC	2.57*	.08	1.25	-	3.36*	.06
PLE	3.94*	.12	0.96	-	0.26	-
ENG	3.44*	.11	0.00	-	1.93†	.04
MEA	8.11**	.23	1.16	-	2.03†	.03
SWLS	17.05***	.38	0.87	-	5.21*	.08
PA	2.84†	.09	1.22	-	3.74*	.07
NA	12.84***	.31	0.26	-	3.51*	.07

Note. $N_{\text{Intervention}} = 29$, $N_{\text{Control}} = 22$. within condition = Comparison of the pretest vs. all later measurement periods for the intervention and the control condition separately. between conditions = Comparison of the pretest vs. all later measurement periods between intervention and control condition. IC = intervention condition, PCG = placebo control condition. REL = Positive Relationships, ACC = Accomplishment, PLE = Pleasure, ENG = Engagement, MEA = Meaning. η^2 = eta squared.
† $p < .10$, * $p < .05$. (one-tailed)

Online Supplementary Material

Appendix A

Items for the Positive Relationships and Accomplishment-Scale

No.	Original German version	Proposed English translation
	Positive Relationships	
16	Bei der Auswahl von Aktivitäten ist es mir wichtig, dass ich sie mit anderen gemeinsam machen kann.	When choosing what to do, I always take into account if I can do it together with others.
17	Ein gutes Leben bedeutet für mich, dass ich es mit anderen teilen kann.	A good life means to me that I can share it with others.
18	Worauf es im Leben wirklich ankommt ist, mit anderen Menschen gut auszukommen.	What really matters in life is to be on good terms with other people.
19	Wirkliches Glück (lachen bis einem der Bauch weh tut, Erfolge feiern, Freude empfinden usw.) kann man nur mit anderen Menschen gemeinsam empfinden.	Real happiness (roaring with laughter, celebrating success, feeling joy, etc.) can only be experienced with other people.
20	Andere Menschen sind die beste und verlässlichste Medizin gegen die Widrigkeiten des Lebens.	Other people are the best and the most reliable remedy against the adversities in life.
	Accomplishment	
21	Es gibt Dinge in meinem Leben, die ich unbedingt erreichen möchte.	There are things in my life that I absolutely want to achieve.
22	Es gibt nichts Schöneres als das, was man erreichen wollte, auch erreicht zu haben.	There is nothing better than having achieved a goal I was aspiring to.
23	Ich habe Ambitionen.	I have ambitions.
24	Die meisten Dinge die ich tue, geben mir das Gefühl, etwas erreicht zu haben.	Most things I do give me a feeling of accomplishment.
25	Ich bin fähig, die meisten Dinge die ich tue, erfolgreich zu absolvieren.	I am able to complete most things I do successfully.

Note. The German version of all items was used. The translation shown in the table has not been validated.

Appendix B

Means and Standard Deviations of the Two Conditions at the Four Different Time Periods for Satisfaction with Life, Positive and Negative Affectivity, Positive Relationships, Accomplishment, Pleasure, Engagement, and Meaning.

	Pre		Post		2 weeks		4 weeks	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Intervention								
REL	3.60	0.94	3.89	0.95	3.72	1.09	3.83	1.00
ACC	3.70	0.57	3.76	0.52	3.89	0.42	3.90	0.40
PLE	3.41	0.52	3.65	0.65	3.55	0.62	3.48	0.66
ENG	3.07	0.48	3.23	0.59	3.21	0.62	3.24	0.52
MEA	2.91	1.09	3.02	1.02	3.22	0.97	3.20	1.05
SWLS	4.79	1.17	5.09	1.20	5.37	1.11	5.32	0.97
PA	3.29	0.51	3.51	0.49	3.46	0.75	3.36	0.67
NA	1.98	0.65	1.59	0.50	1.67	0.61	1.71	0.49
Control								
REL	3.57	0.61	3.69	0.80	3.70	0.69	3.73	0.73
ACC	3.90	0.59	3.75	0.81	3.86	0.48	3.85	0.51
PLE	3.25	0.70	3.35	0.69	3.42	0.50	3.26	0.63
ENG	3.34	0.68	3.31	0.68	3.40	0.60	3.30	0.57
MEA	2.91	0.94	2.87	1.02	3.08	0.82	3.00	0.81
SWLS	4.93	1.34	5.13	1.31	5.07	1.42	4.88	1.35
PA	3.47	0.73	3.44	0.60	3.36	0.60	3.30	0.65
NA	1.82	0.48	1.71	0.62	1.72	0.58	1.85	0.59

Note. $N_{\text{Intervention}} = 29$, $N_{\text{Control}} = 22$. REL = Positive Relationships, ACC = Accomplishment, PLE = Pleasure, ENG = Engagement, MEA = Meaning.